

Khamtí and Ahom characters, above alluded to as presented by Captain JENKINS. The former commences with an invocation to *Buddha* in the Páli language and Burmese character, but there are several grammatical errors committed by the Khamtí copyist—the line should run

နမောတဿ ဘဂဝတော အရဟတော သမ္မာသမ္ဗုဒ္ဓဿာတိ
ဇယတုသဗ္ဗမဂ္ဂလံ

Namotassa bhagavato arahato sammá sambuddhassa ití jayatu sabba mangalam.

Praise to the divine object of worship, the omniscient Buddha; through whom may all happiness conquer.

We hope that Mr. BROWN will enable us to insert a translation of the Khamtí and Ahom texts in a future page.—ED.

III.—*Remarks on the Silk Worms and Silks of Assam.* By Mr. THOMAS HUGON, Sub. Asst. Nowgong.

[Communicated by Capt. F. JENKINS, Pol. Agent in Assam.]

The following worms producing silk are found in *Assam*. The mulberry worm (large and small), the *eria*, the *mooga*, or *moonga*, the *kontkuri*, the *deo mooga*, and the *haumpottonee*. The five last are indigenous to the country, but there are no reasons to suppose that the first is likewise so. The mulberry is scarce, and none is found in the wild state. The time of the introduction could be, perhaps, ascertained in some of the Assamese *booronjees* or chronicles—(which I was unable to procure immediately to ascertain the point); some of them extending several centuries back—as the Assamese got religious instructors from *Bengal*, it is very probable they also got from there the mulberry tree and worm. The use of the silk being confined to the *rāja* and grandees, and the rearing of the worm to one caste, are additional proofs that its introduction did not precede that of Hinduism—the *joogeess* (the caste alluded to) must evidently have come up with it; the Assamese refuse to rear the silk worm, but not having this objection to the other worms would be one proof of the latter being indigenous, were it doubtful.

Mulberry worm.—The management of these worms in *Assam* is nearly similar to what it is in *Bengal*. They are reared within doors, and require the same care and attention as are bestowed on them there; a separate hut is used, which is fitted with bamboo stages with a passage between them and the outer wall—these huts are built north and south with a single door on the east side; this is generally the case, but by no means a fixed rule amongst the Assamese; only one female of the family goes into the house, and previous to doing

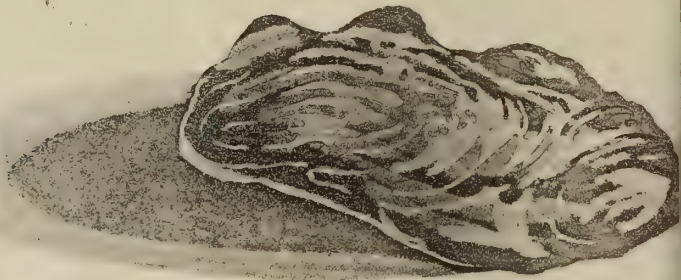
it alway washes her hands and feet. With the Assamese the idea prevails as in other parts, that the eye of the stranger is hurtful—their account of this is, that the worms, fancying the stranger is criticising them, get sulky, abstain from food and die.

The large and small mulberry worms are reared in *Assam*. I will describe the rearing of those which produce only one bund a year, (the larger,) they being more in use than the others in this district. It will be sufficient to shew how far the process assimilates to that followed in *Bengal* and other parts. The moths are made to deposit their eggs on pieces of cloth—these are packed up with the household clothing; when the time of hatching approaches (December), they are taken out and exposed to the air; when the worms are hatched they are fed the first three or four days on the tender leaves cut up, in new earthen pots; then on a bamboo tray. After the first moulting they are removed to the *mutchang* (*machán*) or stages. When they are about beginning to spin, they are put on bamboo trays fitted up with pieces of matting fixed perpendicularly at intervals of two inches: these in the first afternoon are exposed for half an hour to the side where the sun is shining, and afterwards hung up in the house. After leaving as many as are required for breeding, those that are to be wound off, after having been exposed to the sun for three or four days, are put over a slow fire in an earthen vase full of water. One person winds off the silk with an instrument made of three pieces of stick joined together thus, the perpendicular one is held at one end with the right hand, and the left directs the thread over the cross bars—taking care in doing this to make it rub against the fore-arm to twist it—whilst another person attends to the fire and the putting on new cocoons. When a sufficient quantity for a skein has thus accumulated it is taken off the cross bars.

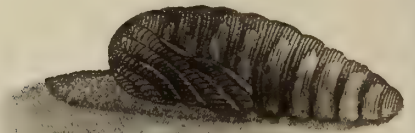
There are hardly any plantations of mulberry in *Assam*, on such a scale as to be worth mentioning; a few men of rank have small patches of it, sufficient to produce silk for their own use;—the few ryuts that sell the silk generally have not more than a seer to dispose of in the year,—the produce of a few plants round their huts or in the hedges of their fields. The leaves are not sold as in *Bengal*, and when a ryut's own supply fails, he obtains it from neighbors who have a few trees merely for the fruit. The worms are reared by *joogees* alone, people of an inferior caste:—those of the highest can cultivate the plant and do all the out-of-door work—but none but a *joogee* can, without degradation, attend to the worms or touch the silk whilst reeling. As the same prejudice does not exist in *Ben-*



Cocoon



Chrysalis



gal, it must have been kept up purposely by the despotic rulers of the country, after mulberry cultivators were introduced, to ensure the use of the silk being confined to themselves and their courtiers—a selfishness which may be observed in many of their rules and prohibitions: this alone would have been a bar to the extension of the cultivation of the mulberry in *Assam*, were there not already greater facilities of obtaining silk from the *mooga* and *eria* worms. No mention is made of silk in the returns of the Hydra chowkey, I do not think half a maund of it altogether is exported in any shape—the price of it is eight or ten rupees a seer, but it is not readily procurable. Mr. Scott, a few years ago, introduced from *Rungpoor*, reelers, reels and plants of the *morus alba*, and established a factory at *Darang*, with a view to extend the culture of mulberry silk, and improve the reeling of the *mooga*. Several causes rendered the experiment abortive, the want of European superintendence and Mr. Scott's untimely death being the principal ones*.

Eria silk.—The *eria* worm and moth differ from the mulberry worm and moth in every respect, as will be better understood by the accompanying drawings and insects: like it, however, it goes through four different moultings, but its sickness in doing it lasts only twenty-four hours; the last stage takes eight days, the others four. The duration of its life varies according to seasons: in summer it is shorter, and the produce both greater and better; at this season, from its birth to the time it begins its cocoon, twenty to twenty-four days expire, in fifteen more the moth comes forth, the eggs are laid in three days, and in five they are hatched, making the total duration of a breed forty-three to forty-seven days: in winter it is nearly two months; the number of breeds in the year are reckoned at seven.

This worm is, like the mulberry worm, reared entirely within doors: it is fed principally on the *hera* or palma-christi leaves, it eats the mulberry leaf also but is said to prefer the former; when the palma-christi leaves fail, they are also fed on those of several other trees known in this part of *Assam* by the following names:—

1. Kossool.
2. Hindoo gass.
3. Meekeerdal.

* From the opinions given by several merchants of *Calcutta* on samples of *Assam* mulberry silk, reeled on Italian reels from worms properly fed and attended to, I am led to believe this province exceedingly favorable to the production of very superior silk.—The samples sent down would have fetched the highest prices in the *Calcutta* market, and they were got up under the unfavorable circumstances of a rude experiment.—P. JENKINS.

4. Okonnee.
5. Gomarree.
6. Litta Pakoree.
7. Borzonolly.

The worms thrive best and produce most when entirely fed on the palma-christi—it is the only plant which is cultivated purposely for it, there is hardly one ryut who has not a small patch of it near his house or on the hedges of his fields—it requires little or no culture—the ground is turned up a little with the hoe and the seeds thrown in without ploughing; whilst the plant is young it is weeded once or twice, but it is afterwards left to itself. The plant is renewed every three years. On the leaves of Nos. 1 and 2, worms can be reared entirely, but they do not thrive well upon it, many die even after having begun the cocoons, and the few of these that are got are small and yield but little. These and the others are only used in the fourth or fifth stage when they are considered to answer quite as well as the palma-christi leaves. The *kossool* (No. 1) alone can be given alternately with the palma-christi. The whole of these trees are found in the forests, but not cultivated.

To breed from, the Assamese select cocoons from those which have been begun in the largest number on the same day—generally the second or third day after cocoons have begun to be formed—those that contain males being distinguished by a more pointed end. These cocoons are put in a closed basket and hung up in the house out of reach of rats and insects. When the moths come forth they are allowed to move about in the basket for twenty-four hours; after which the females, (known only by the larger body) are tied to long reeds or canes, twenty or twenty-five to each, and these are hung up in the house. The eggs that have been laid the first three days amounting to about two hundred are alone kept, they are tied in a piece of cloth and suspended to the roof until a few begin to hatch—these eggs are white, and the size of turnip seed; when a few of the worms are hatched, the cloths are put on small bamboo platters hung up in the house, in which they are fed with tender leaves; after the second moulting they are removed to bunches of leaves suspended above the ground, under them upon the ground a mat is laid to receive them when they fall; when they have ceased feeding they are thrown into baskets full of dry leaves, amongst which they form their cocoons, two or three being often found joined together.

The caterpillar is at first about a quarter of an inch in length, and appears nearly black; as it increases in size it becomes of an orange color, with six black spots on each of the twelve rings which form its body.

The head, claws and holders are black ; after the second moulting they change to an orange color, that of the body gradually becomes lighter, in some approaching to white, in others to green, and the black spots gradually become the color of the body ; after the fourth and last moulting the color is a dirty white or a dark green : the white caterpillars invariably spin red silk, the green ones white. On attaining its full size the worm is about three and half inches long : unlike the *mooga* caterpillar, its colors are uniform and dull, the breathing holes are marked by a black mark—the moles have become the color of the body, they have increased to long fleshy points, without the sharp prickles the *Mooga* worm has ; the body has a few short hairs, hardly perceptible.

In four days the cocoons are complete ; after the selection for the next breed is made, they are exposed to the sun for two or three days to destroy the vitality of the chrysalis. The hill tribes settled in the plains are very fond of eating the chrysalis—they perforate the cocoons the third day to get them, they do the same with the *mooga* and sell few cocoons imperforated.

The cocoons are put over a slow fire in a solution of potash, when the silk comes easily off : they are taken out and the water slightly pressed out : they are then taken one by one, loosened at one end and the cocoon put over the thumb of the left hand, with the right they draw it out nearly the thickness of twine, reducing any inequality by rubbing it between the index and thumb ; in this way new cocoons are joined on. The thread is allowed to accumulate in heaps of a quarter of a seer : it is afterwards exposed to the sun or near the fire to dry ; it is then made into skeins with two sticks tied at one end and opening like a pair of compasses : it is then ready to be wove unless it has to be dyed.

The dyes used are lac, munjeet and indigo, and the process of dying is as follows.

Red Dye.—The lac after having been exposed to the sun to render it brittle, is ground and sieved as fine as possible : it is steeped twelve hours in water, after which the thread is thrown in with the leaves of a tree, called by the Assamese *Litakoo*—(*Pierardia sapida* ? F. J.) When it has absorbed most of this mixture, it is taken out, put over two cross sticks, and shaken a short time to detach the threads well from each other : it is dried in the sun and the same process again gone through twice. When it is wished to increase the brightness of the color, it is again dyed with munjeet : the latter is dried in the sun and ground in the same way, it is steeped for forty-eight hours ; the threads are put in and boiled in the same way, but with the leaves of a

different tree (the *Koh*) : the thread is dried in the sun, and is ready for use. Nearly the same process is gone through for the blue : instead of the common indigo, they sometimes use the *Room*, which plant is, I believe, *Ruellia callosa*—also the leaves of a very large tree found in the forests, called by them *Ooriam*. The thread is wove as cotton. The different prices of the cloths and their use will be found in an annexed table ; their clothes are mostly used for house consumption, a few are bartered with the Bhotias and other hill tribes. Large quantities were formerly exported to *Lassa* by merchants, known in *Derung* as the “ Kampa Bhotias,”—the quantity they used to take away, was very considerable, but in the latter years of the *Assam* rája’s rule, from the disorganized state of the country, the number of merchants gradually decreased ; three years ago only two came after a long interval, one of them died, and I believe the trade has not again been revived : those two merchants complained that they could no more procure the cloths suited to their markets. No exports of it are mentioned in the returns of the Hydra-chowkey. The quantity the country is capable of exporting under an improved management would be very large, for it forms at present the dress of the poorer classes at all seasons, and is used by the highest for winter wear.

I have been unable yet to ascertain the quantity of this silk obtainable from one acre of land, no man can tell me the extent of his plantation, or even the quantity of *Eria* thread he got in a year beyond this, that he had enough for the use of his family ; every ryut has a few plants round his house or farming hedges—which would at most amount to the twentieth part of an acre ; so that for this to afford clothing for a family the produce must be very large indeed.

Mooga Silk.—Although the *mooga* moth can be reared in houses, it is fed and thrives best in the open air and on the trees. The trees which afford it food are known in *Assam* by the following names :—

1. Addakoory.
2. Champa, (*Michelia*.)
3. Soom.
4. Kontooloa.
5. Digluttee, (*Tetranthera diglottica*, HAM.)
6. Pattee shoonda, (*Laurus obtusifolia*, “ ROXB.”)
7. Sonhalloo, (*Tetranthera macrophylla*, “ ROXB.”)

Silk from No. 1. Addakoory.—The Addakoory, the worms fed on which produce the *Mazankoory mooga*, is a middle-sized tree, used for rearing worms only when under four years. It sprouts up where forests have been cleared up for the cultivation of rice or cotton. The worms that are put on the tree on the first year of their appearance

above the ground produce the best silk. The second year the crops are inferior in quality and quantity, and the third it is little if at all superior to the common *mooga*. The *Mazankoory* silk is nearly white, and its value fifty per cent. above that of the common fawn-colored.

The tending of the worms on this tree is much more laborious than on any of the others: young trees only being used, they have to be constantly removed to fresh ones: the smoothness of the bark also renders it necessary to help them in moving from branch to branch. This tree is more abundant in *Upper* than in *Lower Assam*—last year it was for the first time found to exist in the forests of the *Morung*, on the eastern boundary of this district: the Upper Assamese who are settled throughout this district (they form one-fourth or one-fifth of our population here), have never met with it in any other place.

No. 2. Champa.—The *Champa* is found, as the *Addakoory*, where forests have been cleared: the silk of the worms fed on it is called "*Champa pootia mooga*." It is held in the same estimation as the "*Mazankoory*;" I do not know whether it is also used when young—the tree is not met with in *Lower Assam*.

No. 3. Soom.—The *Soom* is found principally in the forests of the plains and in the villages, where the plantations of this tree are very extensive. It attains a large size and yields three crops of leaves in the year: the silk produced by it is of a light fawn color, and estimated next to the *Mazankoory*: the plantations are most abundant in the eastern half of this district.

No. 4. Kontooloa.—This is a large tree found both in the hills and the plains—also a few in the villages: the leaves are too hard for young worms: they are reared on the preceding (*No. 3*), till the third moulting, and then put on this tree; by which process the silk obtained is stronger than that from worms reared entirely on the *Soom*.

No. 5. Digluttee.—A tree of a small size not much used on that account: the silk equal to that obtained from *No. 3*.

No. 6. Pattee shoonda.—Middle-sized tree, found principally in forests—few to be met with in the villages of *Lower Assam*—used when the leaves of *No. 3* are done.

No. 7. Sonhalloo.—The *Sonhalloo* is found in the forests of the hills and plains, where it attains a very large size: it is also found in the villages, where in six years it attains its full growth (thirty feet); it is very abundant in the western portion of this district. *Rara, Jumna, Mookh, Jyntea*, and the valley of *Dhurmpoor*—at the latter place, where the hill tribes of *Mikirs* and *Kachiris* clear dense forests for the cultivation of rice and cotton, numbers of the plants spring up

spontaneously. After three or four years when the land getting poorer requires more tillage and the use of the plough, these tribes who only use the *kar*, or hoe, remove to new forests and leave behind them plantations of these trees, which they have used during the short period they have remained. To them, the ryuts of the more settled parts resort in the spring to rear up worms: the silk of the Sonhalloo-fed worm is considered inferior to the preceding—more I believe from its darker color than any other cause.

There are generally five breeds of *mooga* worms in the year, they are named after the months at which they generally occur.

1. *Jarooa*, in January and February.
2. *Jeytooa*, in May and June.
3. *Aharooa*, in June and July.
4. *Bhodia*, in August and September.
5. *Khotia*, in October and November.

The first and last are the best crops as to quality and quantity. Nos. 3 and 4 yield so little and so inferior a silk, that they may be said to be merely for the purpose of continuing the breed. Were the Assamese acquainted with the process of retarding the hatching of the eggs as is practised in *China*, in regard to the mulberry silk-worm, they would, I think, find it more advantageous to have only three or four crops.

The same rule is followed in the selection of cocoons to breed from as in the *Eria*. They are put in a closed basket suspended from the roof: the moths as they come forth having room to move about, after a day the females (known only by their larger body) are taken out and tied to small wisps of thatching grass, taken always from over the hearth—its darkened color being thought more acceptable to the moth. If out of a batch there should be but few males, the wisps with the females tied to them are exposed outside at night: the males thrown away in the neighbourhood find their way to them: these wisps are hung on a string tied across the house to keep them from the lizards and rats. The eggs laid during the first three days (about 250) are the only ones thought worth the keeping: those laid on the two or three subsequent days are said to produce weak worms. The wisps are taken out morning and evening, and exposed to the side where the sun is shining: ten days after the laying of the eggs, a few of them are hatched: the wisps are then hung up to the tree, the young worms finding their way to the leaves—care must be taken that the ants have been destroyed, their bite proving fatal to the worm in its early stages. To effect this they rub the trunk of the tree with molasses and tie to it fish and dead toads. When large

numbers have been attracted to one place they destroy them with fire ; this they do several times previously to the worms being put on ; the ground under the trees must be kept clear of jungle to make it easy to find the worms that fall down—young trees are preferable until the second moulting.

To prevent the worms coming to the ground, fresh plantain leaves are tied round the trunk, over the slippery surface of which they cannot crawl. They are removed to fresh trees on bamboo platters tied to long poles.

Bats, owls, rats, are very destructive at night : in the day the worms require to be constantly watched—crows and other birds being so fond of them, that they lie in wait in the neighbouring trees. An old lady's doze over her morning " canee " (opium), however short, is sure to be fatal to several worms—the *goolail* which is always at hand often punishes the thief, but the mischief is done.

Numbers are destroyed in the more advanced stages by the sting of wasps—and by the ichneumon insect which deposits its eggs in their body. These are hatched when the cocoon is half formed : they perforate it at the side and the chrysalis is found dead : the worms which have thus been stung are known by black marks on their body. Were the people more careful in their management, this would be of little consequence : by making these worms spin apart, the cocoon being formed before the chrysalis is killed, the silk could be saved.

The worms thrive best in dry weather : but a very hot sunny day proves fatal to many at the time of moulting. At these periods rain is very favorable, thunder storms do not injure them as they do the mulberry worm ; continual heavy-rains, (which are rarer in *Assam* than in *Bengal*) are hurtful by throwing them down—showers, however heavy, cause no great damage, they taking shelter under the leaves with perfect safety. The worms during their moultings remain on the branches, but when about beginning to spin they come down the trunk, the plantain leaves preventing their going further down they are collected in baskets, which are afterwards put under bunches of dry leaves suspended from the roof—they crawl up into these and form their cocoons—as with the *Eria* several are often joined together. The silk of these they spin instead of winding : above the plantain leaf a roll of grass is tied for those that come down during the night to begin spinning in—after four days the selection of cocoons for the next breed is made and the rest wound off.

The total duration of a breed varies from sixty to seventy days. The period is thus divided—four moultings, with one day's illness attending each, 20

From fourth moulting to beginning of cocoon,	10
In the cocoon,	20
As a moth,	6
Hatching of the eggs,	10

 66

On being hatched the worm is about a quarter of an inch long, it appears composed of alternate black and yellow rings; as it increases in size the former are distinguished, as six black moles, in regular lines on each of the twelve rings which form its body. The colors gradually alter as it progresses, that of the body becoming lighter, the moles sky-blue, then red with a bright gold-colored ring round each. When full grown the worm is above four inches long; its colors are most brilliant and varied in shades: the body appears transparent and is of a very light yellow or dark green color, with a brown and a yellow streak at the sides; in the latter the breathing holes are distinguished by a black speck: the moles are red and have each four sharp prickles and a few black hairs: the head and claws are of a light brown, the holders green and covered with short black hair; the last pair have a black ring on the outside. On being tapped with the finger the body renders a hollow sound; by the sound it is ascertained whether they have come down for want of leaves on the tree, or from their having ceased feeding.

The chrysalis not being soon killed by exposure to the sun, when they have many cocoons they put them on stages, cover them up with leaves and burn grass under them; the cocoons are then boiled for about an hour in a solution of the potash made from the dried stalks of rice, they are then taken out and laid on cloth folded over to keep them warm; from this they are taken as required and thrown in hot water (not over the fire) after the floss has been removed with the hand. The instrument used for winding off the silk is the coarsest imaginable: a thick bamboo about three feet long is split in two, and the pieces driven equally in the ground two feet apart: over the interior projection of one of the knots is laid a stick, to which is fixed, a little on one side, a round piece of plank about one foot in diameter—the rotary motion is given by jerking this axle, on which the thread rolls itself: in front of the vessel holding the cocoons a stick is fixed horizontally for the thread to travel upon. Two persons are employed—one attending the cocoons, the other jerks the axle with the right hand and with the same hand directs the thread up the left forearm, so that it is twisted in coming down again towards the hand; the left hand directs the thread over the axle. Fifteen cocoons is the



The Torea Silk moth
Bombyx religiosa



Cocoon

Moonga Silk-worm
and moth



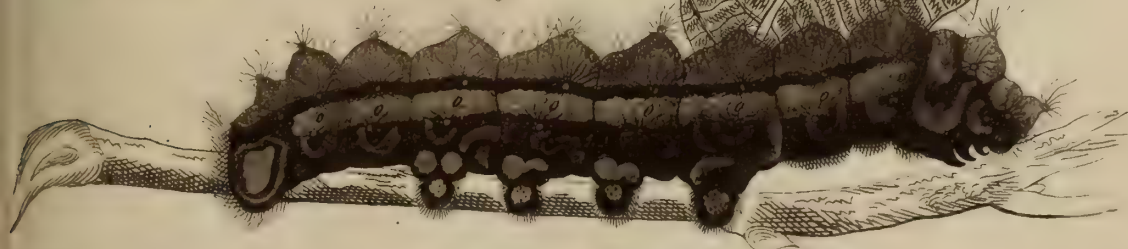
1st Stage

3rd Stage



Chrysalis

5th Stage



smallest number they can wind off in one thread, twenty the number generally; even the last is often broken from the coarseness of the instrument used, although the fibre is much stouter than that of the mulberry silk. When nearly a quarter of a seer has accumulated on the axle, it is dried in the sun and made into skeins of one or two rupees weight. This is done with a small bamboo frame set in motion by the common spinning machine of the country: if it has to be dyed the same process is followed as with the *Eria*. The cloths usually made of *mooga* and their use will be found in the annexed table: besides those, I have seen it used as the warp with cotton, and the cloth so made is a little lighter color than nankin and much stronger; but this is seldom done, from the trouble of spinning the cotton fine enough. Cotton twist adapted to that purpose would, I think, meet a ready market.

The exact quantity of silk which an acre of *mooga* trees can produce could not be ascertained without a trial. Fifty thousand cocoons per acre*, which makes upwards of twelve seers, are considered by the Assamese a good yearly return. Sixty rupees the value of twelve seers must be a very profitable one, for there is little labor or expense to the ryut in making or keeping up a plantation: whilst the trees are young, the ground is available for cultivation besides rearing worms; sugar-cane, rice, pulse, &c. are cultivated with benefit rather than injury to the young trees. The tax is fourteen annas the acre in this district. The great value of the *mooga* is, that it enables the weaker members of a family to contribute as much as the most robust to the welfare of the whole. Besides attending to the worms most of them weave, spin or make baskets, while watching them.

From causes which I have been unable to ascertain, and of which the natives are ignorant, the *mooga* some years failed so completely in particular districts that none was left to continue the breed. There being very few weekly *hauts* or markets to resort to, to procure cocoons for breeding from the more fortunate people of other districts, a failure of this kind in one place is sensibly felt for two or three years after in the production. The time of the ryut, who has at most half or a quarter of an acre of *mooga* trees, is too valuable to allow of his being absent for a month and more, going from village to village, and house to house to find out the people who have cocoons for sale. This last season in our *Jumna-múkh* (*Cachar*) pergunnah the *mooga*

* An Assamese Poorah of land is a little more than an English statute acre, and such lands hitherto have not been taxed, or at a very low rate, if cultivated with other crops besides the *mooga*.

was a complete failure; there are no worms on the trees now, from inability to procure cocoons, although there was a very abundant crop in two pergunnahs at the opposite end of the district.

The *mooga* plantations are principally round the ryuts' houses, and are included in house-lands. By this year's measurement of the Barree lands in the three divisions of the *Nowgong* zillah where the land tax obtains, the quantity in actual occupation (exclusive of those which being unclaimed have reverted to the state) amounts to 5350 acres: the proportion of *mooga* plantations is upwards of one-fourth or 1337 acres. In the five other divisions of the same zillah, which are three times the area, and have more than double the population, but of which we have no accurate measurements, I will only venture to estimate the quantity of *mooga* plantations at half that of the other three or about 600 acres, but on this low calculation there would be a total of 2000 acres for *Nowgong*. Estimating the plantations of the *Derung* and *Kamráp* zillahs at only 1500 acres each, there would be a total of 5000 acres of those plantations in *Lower Assam*, exclusive of what the forests contain of them: this quantity is capable of producing in one year 1500 maunds. In *Upper Assam* I understand the plantations are more extensive than ours.

4. *Kontkúrí Mooga*.—This worm feeds on many trees besides the “*mooga* trees;” it is found oftener on the *bair*, (*Zizyphus jujuba*,) and the *seemul*, (*Bombax heptaphyllum*,) but not in great quantities. The worms, moths and cocoons are considerably larger than any of the others; indeed the cocoon is the size of a fowl's egg. Several Assamese told me they had vainly attempted to domesticate them; the eggs have been hatched, but after observing the worms for a few days on the trees they have at once disappeared. They attributed this to its being a “*dewang*” or spirit; the real cause may probably be its being fond of changing its food, and gifted with greater locomotive powers than the generality of the silk-worms. I have been told by some Bengalees that it is found in *Bengal* in the wild state on the “*bair*” as in *Assam*, and called “*Gootee-poka*;” it is there reeled off like the mulberry silk and much valued for fishing lines, but not wove, probably from its scarcity. The fibre is stronger than that of the *mooga* and of a lighter color.

5. *Deo Mooga*.—I accidentally became acquainted with this worm, which is very little known to the natives and entirely in the wild state. Three years ago being employed in *Jumna-múkh* (*Cachar*), I had occasion to take some bearings, for which purpose I had a white cloth put up on a large “*Bur*” tree, (*Ficus Indica*;) the year after, being near the same spot, the ryuts came and told me that two months after

I left (April), they observed that the tree had lost all its foliage, they went to it and found in the surrounding grass and dry leaves, a large number of small cocoons; these they spun like the *eria* out of curiosity and used it with the latter. They took no further notice of succeeding breeds, finding the thing of little present use. I lost a few cocoons which I procured at the time, but have lately seen both the worm and the cocoon, the former is quite different from any other; it is more active, its length is under $2\frac{1}{2}$ inches, the body very slender in proportion to its length, the color reddish and glazed. I could not observe them more particularly, as they were brought to me one evening at dusk: I put them in a box, with the intention of examining them the next morning, but they disappeared during the night, although it was open very little to admit the air. The moth is very much like that of the mulberry, so is the cocoon also in appearance, color and size; I have questioned many of the natives about this worm, but none had ever seen it before—their opinion of it is that it is a “dewang” (spirit) brought there by the prismater compass and the white flay—this made them call it *ded mooga*.

The *haumpottenee*, a caterpillar very common in *Assam* (and elsewhere perhaps), may also be mentioned as one of the varieties of the species, although it forms but a very imperfect cocoon: it feeds on most leaves. I have had no opportunity yet of observing it myself; but am told by the natives that it goes through similar stages to the others; the worm is about two inches long, of a brown color and covered with hair, the moth of the same color as the *mooga* moth but only half the size; the cocoon has this peculiarity, that it is quite transparent, so that the chrysalis can be seen inside; at one end of it a small opening is left—the cocoon is of a yellow color—it can be spun like the *eria* cocoon, but the Assamese do not use it, on account of its silk causing a severe itching in wearing.

I have questioned several Bengalees settled in *Assam* and who have been at *Midnapur*, regarding the identity of the *mooga* and *tussur*; they say that the worm is the same, but that at the latter place they are fed on a different tree: the point could be better ascertained by a comparison with the drawings and preserved worms which accompany these remarks. The Burmese envoys who have just left *Assam* told me that the *mooga* was unknown in their country previous to the conquest of *Assam*; but that it had since been introduced by the Assamese who were carried off and settled in the Burmese territory: the *Cacharis* also admit that it is not many years since it was introduced into *Cachar*, (south of the hills.) In *Cooch Behar* both it and the *eria* are almost unknown to this day; the prevailing opinion amongst the natives of

these parts is, that both species (*mooga* and *eria*) are indigenous to *Upper Assam* and were introduced from thence. It has always appeared to me that the production of these silks is greater as one advances to the east—it is to this day procurable more abundantly in *Upper Assam* than any where else, especially in the district of *Lukinpoor* on the north bank of the *Burhampootur*.

Little *eria* is exported, but the *mooga* forms one of the principal exports of *Assam*; the average of the quantity passed at *Gowalpara* during the two last years that duties were levied, was two hundred and fifty-seven maunds, valued at fifty-six thousand and fifty-four rupees: it leaves the country principally in the shape of thread. Most of it going to *Berhampoor*, it is probable that the cloths made from it pass under the name of *tussur*; the latter as far as I recollect, appears to have less gloss. The Hydra chowkey returns comprise only the products exported by water. The total quantity that leaves the province may, I think, be estimated at upwards of three hundred maunds, for *mooga* forms also a portion of the traffic with *Silhet* (across the hills) the *Cassyas*, *Bhotias*, and other hill tribes. The Assamese generally keeping more for their own use than they sell, the total quantity produced in the province may be reckoned at six or seven hundred maunds. It has been in great demand in *Bengal*, for within the last few years, although the production has been greater from the more settled state of the country, the price has risen 20 per cent. When I first arrived in this district, it could be obtained without difficulty from the ryuts at three and a half to four rupees the seer; now it is difficult to procure it at five rupees. The competition is so great, that the traders pay for it in advance, not as with other products, to get it at a lower rate, but merely to secure their getting it. This competition is also owing to the greater number of small traders who resort to the province since the abolition of chowkeys—which may have caused a rise on the price of the product in *Assam* without a corresponding increase in the exports.

No gradual improvement can be traced in the mode of rearing the several worms or winding their silk—it is now what it was a century ago, there being no European speculators in *Assam*, nor it being probable that when any venture so far they would readily risk the capital in quite a new branch of industry. This important product of the country is likely to remain for years unimproved, unless the subject should again be taken up by Government. The small factory set up by the late Mr. SCOTT, to which I have before alluded, was kept up too short a time to have had any perceptible effect. Mr. SCOTT's declining health and numerous duties never allowed him to give it a